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Smart from the start: Embedding O&M in bridge design

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Key Takeaways summarised by AI

- O&M liabilities should be addressed at concept stage, not left to later phases.
- Design is a major root cause of future maintenance burden—minimise issues through smart design choices.
- New SCI guidance (P185, 7th Edition) introduces a practical framework: Eliminate, Reduce, Inform.
- Use tools like BIM early to assess maintenance access and reduce long-term risk.
- Design decisions (e.g., integral vs. bearing-supported bridges) can significantly reduce lifecycle costs.

Session transcribed by OtterAI, then summarised using ChatGPT

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Detailed AI Session Summary:

This session, led by Andrew, focused on the need to consider operation and maintenance (O&M) requirements during the design phase of new bridges, to reduce future liabilities. Drawing on a large-scale industry survey, Andrew shared that six key O&M challenges—painting, movement joints, deck waterproofing, fatigue repairs, bearing replacement, and hidden critical elements—were consistently cited as cost drivers. Analysis of the root causes revealed that design decisions were a major factor in creating these long-term burdens, highlighting the urgency of embedding maintainability from the outset.

To help address this issue, Andrew introduced a new three-tier design framework—Eliminate, Reduce, Inform—designed to guide bridge designers and technical approvers through better O&M thinking. Examples were provided to show how risks can be eliminated (e.g. specifying integral bridges to avoid bearings), reduced (e.g. better detailing of abutment galleries, jacking points, and secondary bearing plates), and communicated (e.g. clearly marking jacking loads and maintenance sequences on drawings). This mirrors the logic of CDM risk frameworks and gives maintainers better tools to work safely and efficiently.

The session concluded with the announcement of the new 7th Edition of SCI's P185 guidance, now updated to include specific O&M design advice, including the new checklist and framework. Delegates were encouraged to access the document via QR code or IHS, and to ensure these principles are applied rigorously in AIP and concept design stages. The message was clear: designing for long-term resilience starts now, not later.

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